Introduction to SMIL

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SMIL

Synchronized Multimedia Integration Language

- **A powerful markup language**
- **Timing Control**
- **Layout Control**
- **Synchronize RealVideo, RealAudio, RealPix, Flash & JPEG**

Advantage of SMIL

- Multi Language
  - Language detection
  - Switching Logic
- Multi Bandwidth
  - Bandwidth detection
  - Switching Logic
- Multi Location
  - Open container

Serving SMIL

- Serve by RealServer
- Link your Web page

SMIL General Rules

- Starts with <smil> & Ends with </smil>
  - - Body Section is Required
  - - Header Section is Optional

```
<smil>
  <head>
    ...optional...
  </head>
  <body>
    ...required body...
  </body>
</smil>
```

SMIL General Rules

- Tags Must be Closed with a Forward Slash or Closing Tag.
- Attribute Values Enclosed in Double Quotation Marks

```
<audio src="first.rm"/>
```

- HTML-Style Comments Allowed

```
<!-- This is a comment -->
```

SMIL General Rules

- Lowercase Text for Tags and Attributes
- SMIL Files Use the Extension .smil or .smi
- Indentation Recommended

Timing Control in SMIL

- Sequential
- Parallel
- Mixing

Playing Clip in Sequence

```
<smil>
    <seq>
        <audio src="audio/newsong.rm"/>
        <audio src="audio/oldsong.rm"/>
    </seq>
<smil>
```

Playing Clip in Parallel

```
<smil>
        <par>
           <audio src="music/newsong.rm"/>
           <textstream src="lyrics/newsong.rt"/>
        </par> >
<smil>
```

Data type

- Animation, Flash file (.swf).
- Audio, RealAudio (.rm)
- Video, RealVideo (.rm)
- Img, JPEG (.jpg), GIF images (.gif), or PNG images (.png).

Data Type

- ref, all type including any clip type not covered by other attributes, such as a
  - RealPix file (.rp)
  - Static text clips (.txt)
  - Streaming RealText clips (.rt)

URL Path

```
<head>
    <meta name="base"
  content="rtsp://realserver.example.com/"/>
</head>
<body>
    <audio src="audio/first.rm"/>
</body>
```

rtsp://realserver.example.com/audio/first.rm

URL Path

- **HTTP URL**

  ```
  <img
      src="http://www.example.com/images/logo.gif
      "/>
  ```

- **Directory notation such as "../" are also acceptable**

Local Path

- src="audio/first.rm"

  one level below the SMIL file in the audio directory.

- Absolute local links to specify exact locations.

  src=file:// c:\ audio\first.rm

  Absolute Path is OS dependent

Ending a on a Specific Clip

Pararallel Group

- **<par endsync="first">**

  ...

  </par>

- **stop the <par> group when the clip with the shortest timeline ends playback**

Ending a on a Specific Clip

Pararallel Group

- **<par endsync=“last">**

  ...

  </par>

- **stop the <par> group to conclude when all clips have finished playing. (default)**

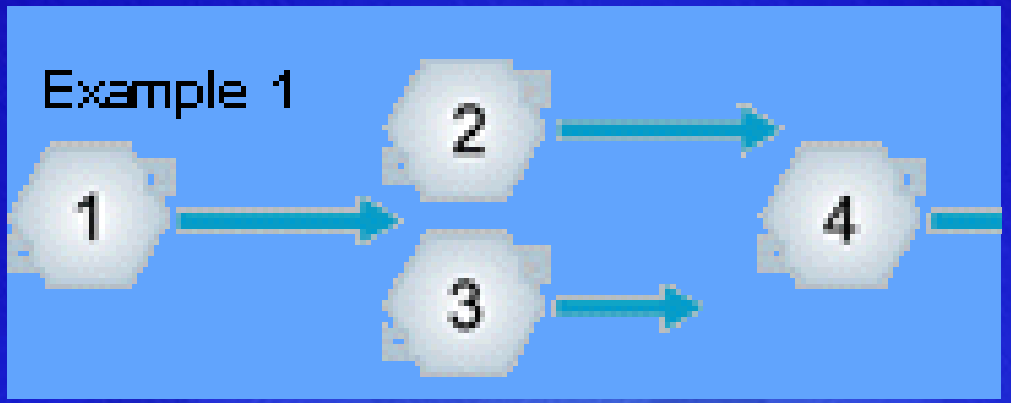
Ending a on a Specific Clip

- <par endsync="id(vid)">
  <video id="vid"
  src="videos/newsong.rm" region="video"/>
  <textstream src="lyrics/newsong.rt"
  region="text"/>
  </par>

- stop the <par> group to conclude when the clips “vid” has finished playing.

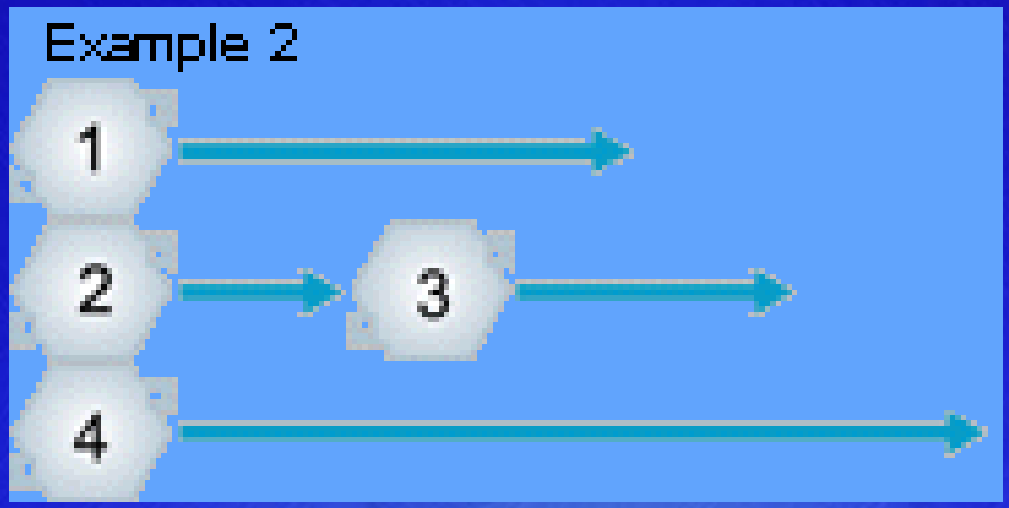
Putting <seq> & <par> together

```
<seq>
  clip 1
    <par>
      clip 2
      clip 3
    </par>
  clip 4
</seq>
```



Putting <seq> & <par> together

```
<par>
    clip 1
    <seq>
        clip 2
        clip 3
    </seq>
  clip 4
</par>
```



Specifying Time

- **`hh:mm:ss.xy` format.**

  `hh` is hours

  `mm` is minutes

  `ss` is seconds

  `xy` is hundredth of a second.

begin="02:34:00" = 2 hours, 34 minutes

begin="02:34" = 2 minutes, 34 seconds

Shorthand for time

Timing Marker	Specifies	Example	Example Value
h	Hour	`2.5h`	2 hours, 30 minutes
Min	Minute	`2.75min`	2 minutes, 45 seconds
S	Second	`15.55s`	15 seconds, 550 milliseconds
Ms	1/1000 sec	`670.2ms`	670.2 milliseconds

Setting Duration

- The dur attribute controls how long a clip or group stays active after it starts to play back.

```
<video src="videos/newsong.rm"
    begin="20.5s" end="62.7s"/>

<video src="videos/newsong.rm"
    begin="20.5s" dur="42.2s"/>
```

Setting a Fill

- Determines what happens to the clip immediately after it plays to its normal end point

  fill="remove"

  fill="freeze"

```
<video src="videos/newsong.rm" dur="30s"
    fill="freeze"/>
```

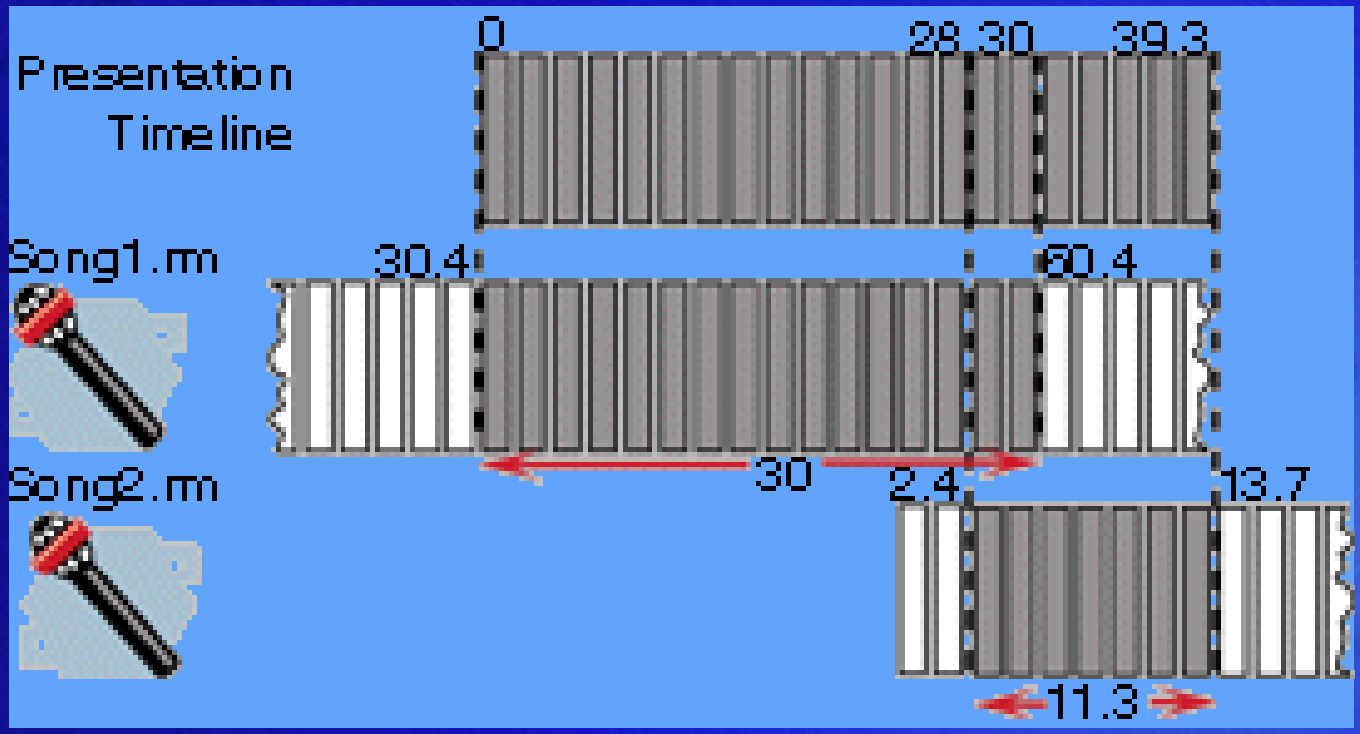
- no effect on audio

Timing Example

- <par>
  <audio src="song1.rm" clip-begin="30.4s" dur="30s"/>
  <audio src="song2.rm" begin="28s" clip-begin="2.4s"clip-end="13.7s"/>
  </par>

Answer

Answer: Total Time = 39.3 seconds



Repeat Playing

- <video src="videos/newsong.rm" repeat="4"/>

- <video src="videos/newsong.rm" repeat="4" end="3.5min" fill="freeze"/>

newsong.rm = 3min

Repeating Indefinately

- <audio src="music/newsong.rm" end="1.5min" repeat="indefinite"/>

  newsong.rm = 30 sec

  Repeated for 3 times

Ie. Background Music

Layout

- Displays several clips at a time.
  1. Put <layout> and </layout> tags.
  2. Define a root-layout region (overall size)
  3. Define a sub region

Layout example

```
<smil>
    <head>
      <layout>
          <root-layout ... overall window size... />
          <region id="name1" location… />
      </layout>
    </head>
    <body>
      <ref src="..." region="name1" ...assigns a
      clip to a region by name... />
    </body>
</smil>
```

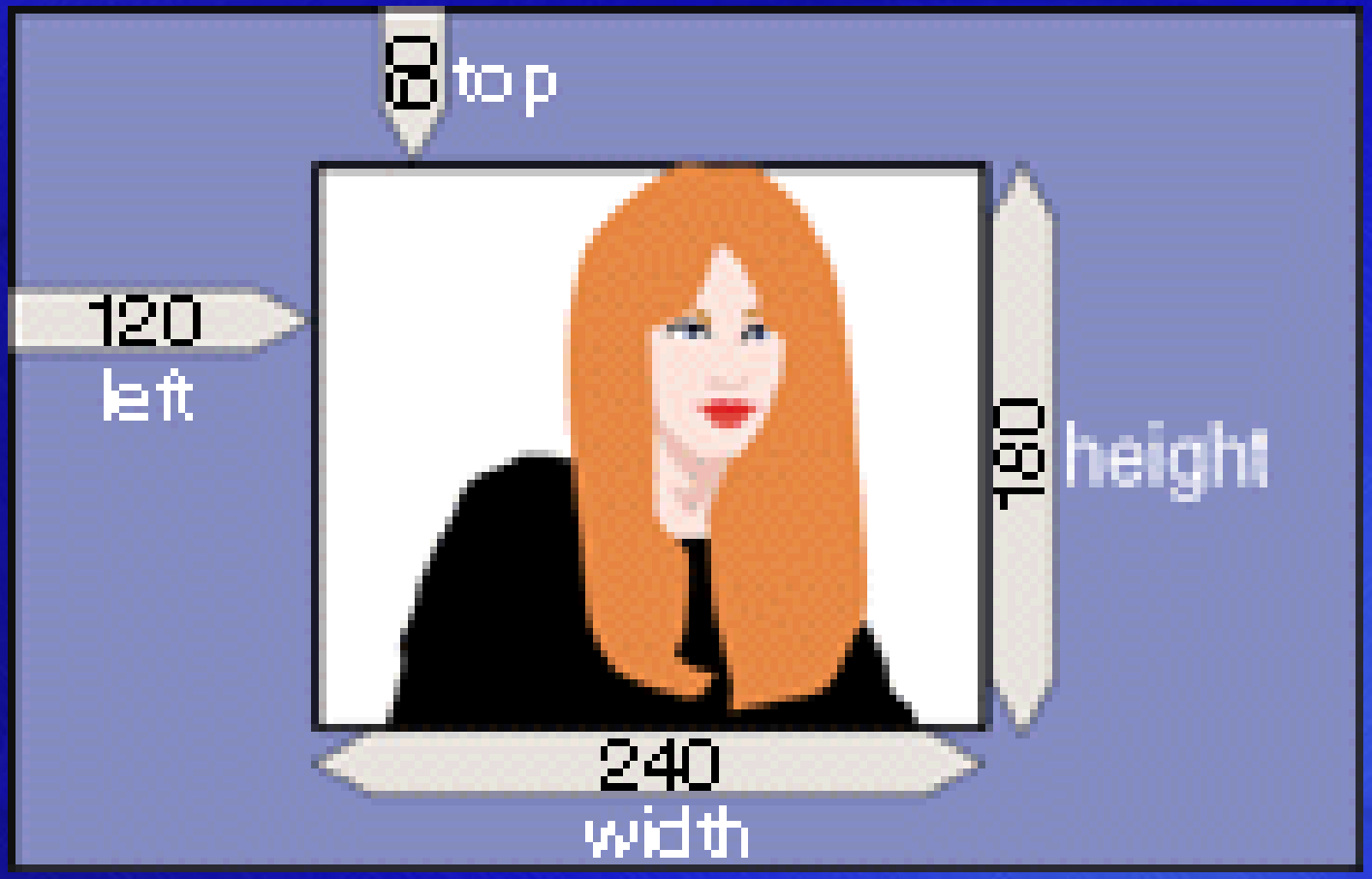
Root Layout

```
<head>
   <layout>
      <root-layout width="600" height="600"/>
   </layout>
</head>
```

Playback Region

Attribute	Sets	Pixel Example	Percentage Example
top	offset from top of root-layout	top="60"	top="10%"
left	offset from left side of root-layout	left="120"	left="20%"
width	region width	width="240"	width="40%"
height	region height	height="180"	height="30%"

Layout Example



Layout Example 2

```
<head>
    <layout>
      <root-layout background-
        color="maroon" width="250"
        height="230"/>
      <region id="videoregion" top="5"
        left="5" width="240" height="180"/>
      <region id="textregion" top="200"
        left="5" width="240" height="20"/>
    </layout>
</head>
```

Example

Layout with Video and Text windows

Color Table

white (#FFFFFF)	silver (#COCOCO)	gray (#808080)	black (#000000)
yellow (#FFFF00)	fuchsia (#FF00FF)	red (#FF0000)	maroon (#800000)
lime (#00FF00)	olive (#808000)	green (#008000)	purple (#800080)
aqua (#00FFFF)	teal (#008080)	blue (#0000FF)	navy (#000080)

Transparent

1. **background color.**
2. **not visible until a clip starts to play in it.**

Defining How Clips Fit Regions

- **Fill**

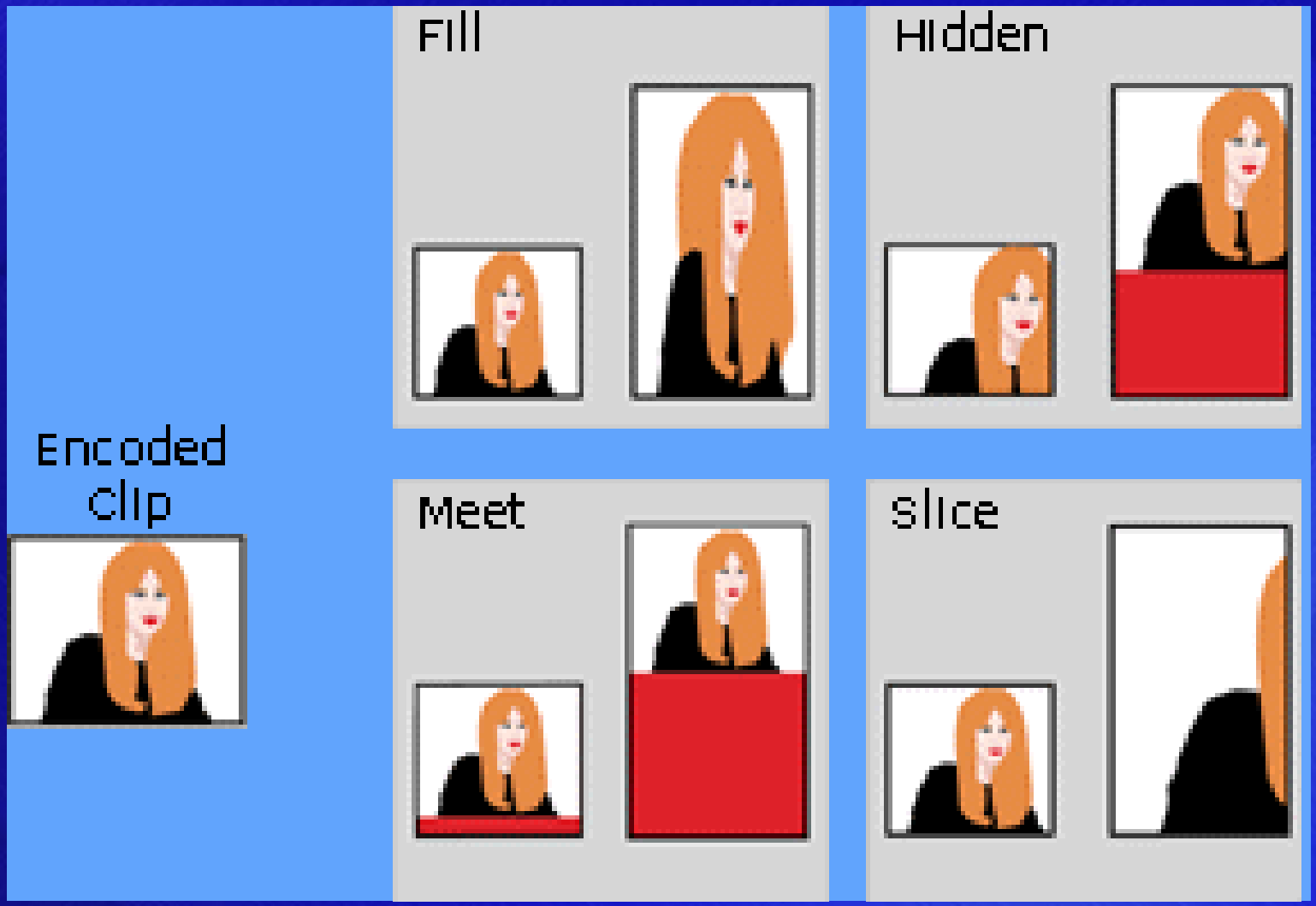
  Resize with disortion
- **Hidden (default)**

  Origanal size with possible cropping
- **Meet**

  Resize with no cropping
- **Slice**

  Resize with possible cropping
- **Scroll**

Different ways to Fill

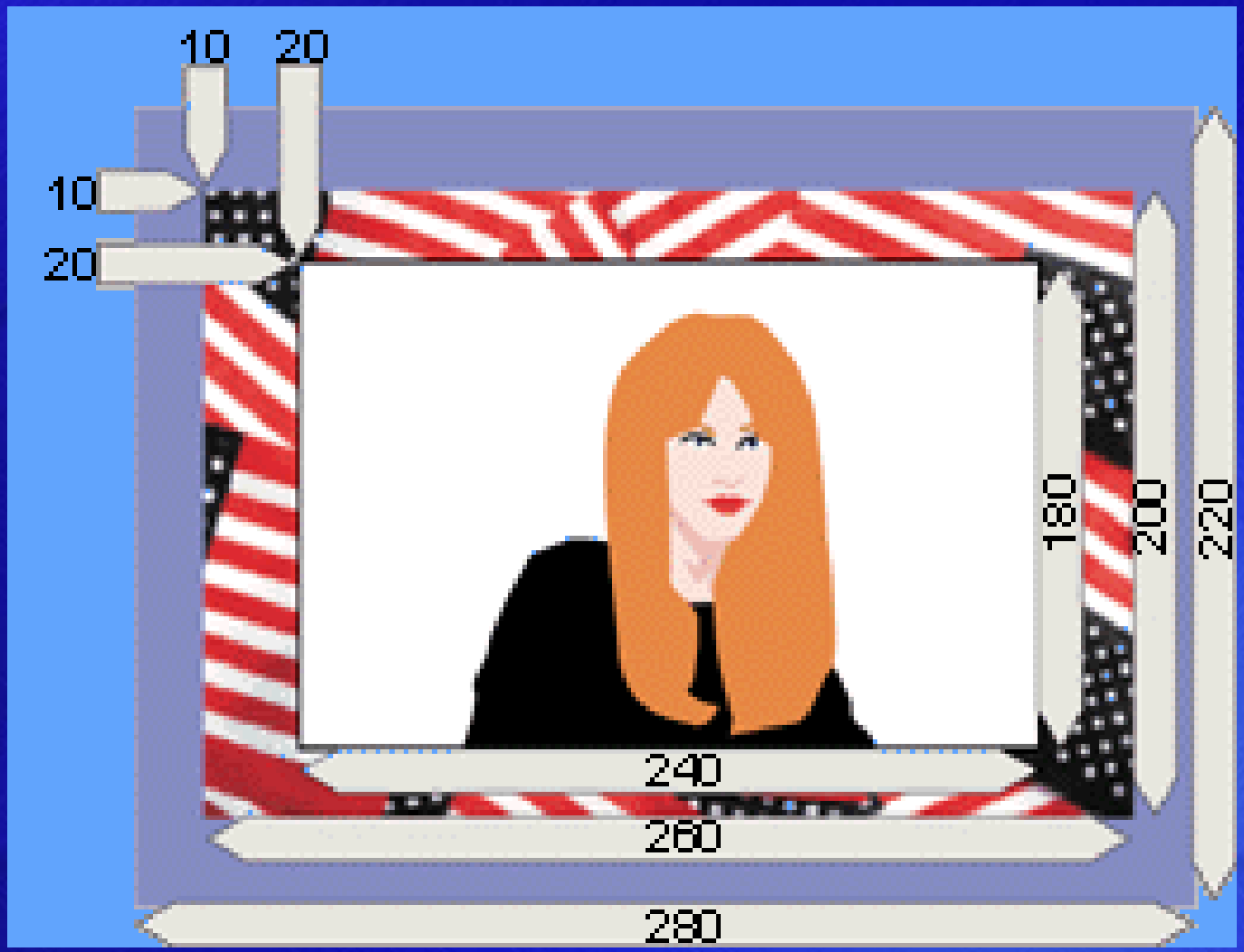


Z-index

```
<layout>
    <root-layout background-color="gray"
    width="280" height="220"/>
    <region id="image" top="10" left="10"
    width="260" height="200" z-
    index="0"/>
    <region id="video" top="20" left="20"
    width="240" height="180" z-
    index="1"/>
</layout>
```

Z-index 0 = background

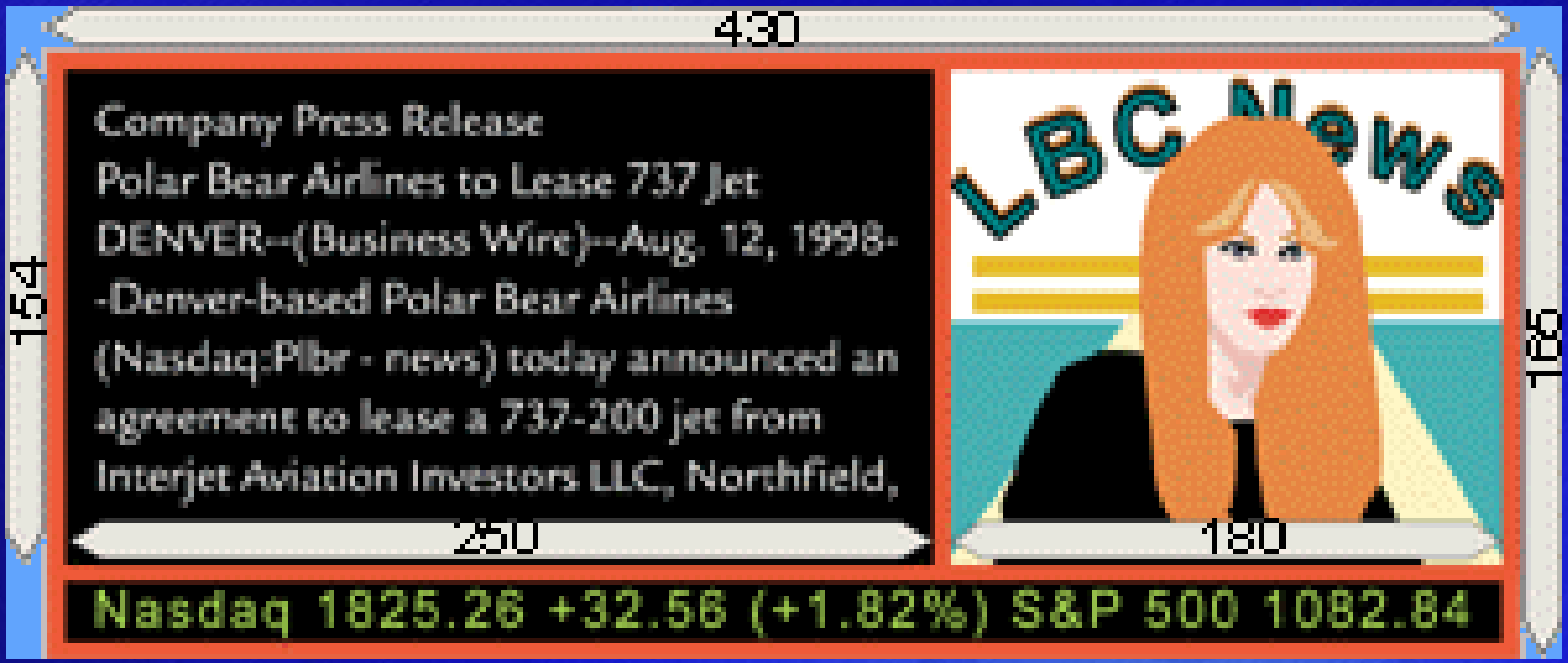
Z-index Example



Assigning Clips to region

```
<smil>
    <head>
      <layout>
        <root-layout background-color="maroon"
          width="250" height="230"/>
        <region id="videoregion" top="5" left="5"
          width="240" height="180"/>
      </layout>
    </head>
    <body>
      <par>
        <video src="video.rm" region="videoregion"/>
        <audio src="audio.rm"/>
      </par>
    </body>
</smil>
```

Quiz


430
154
Company Press Release
Polar Bear Airlines to Lease 737 Jet
DENVER--(Business Wire)--Aug. 12, 1998-
-Denver-based Polar Bear Airlines
(Nasdaq:Plbr - news) today announced an
agreement to lease a 737-200 jet from
Interjet Aviation Investors LLC, Northfield,
250
LBC News
180
185
Nasdaq 1825.26 +32.56 (+1.82%) S&P 500 1082.84

Answer

```
<head>
    <!--presentation with 2 text clips and 1 video clip-->
    <meta name="title" content="News of the Week"/>
    <layout>
        <root-layout width="430" height="165"/>
        <region id="newsregion" top="0" left="0"
          width="250" height="144"/>
        <region id="videoregion" top="0"
          left="250"width="180" height="144"/>
        <region id="stockregion" top="145"
          left="0"width="430" height="20"/>
    </layout>
</head>
```

Answer (Part 2)

```
<body>
    <par>
      <!--play these 3 clips simultaneously-->
      <textstream src="news.rt" region="newsregion"/>
      <video src="newsvid.rm" region="videoregion"/>
      <textstream src="stocks.rt" region="stockregion"/>
    </par>
</body>
```

Switching

```
<switch>
        <choice1 test-attribute="value1"/>
        <choice2 test-attribute="value2"/>
</switch>
```

Switching

- **Language Switching**

```
<par>
    <ref src="slides/seattle.rp"/>
        <switch>
            <audio src="chinese/seattle.rm" system-
              anguage="zh-cn"/>
            <audio src="english/seattle.rm" system-
              language="en"/>
        </switch>
</par>
```

Switching

- **Bandwidth Switching**

```
<par>
    <switch>
        <ref src="pix/slides1.rp" system-bitrate="80000"/>
        <ref src="pix/slides2.rp" system-bitrate="20000"/>
    </switch>
</par>
```

Linking to Other Media

```
<a ref="http://www.example.com/index.htm"
    show="new">
    <video src="video.rm" region="videoregion"/>
</a>
```

- show="replace“, same windows
- show="new“, browser
- show="pause“, pause, browser

Defining Hot Spot

```
<video src="video.rm" region="videoregion">
    <anchor href="/video/r1.rm"
    coords="25%,25%,75%,75%"/>
</video>

<video src="video.rm" region="videoregion">
    <anchor href="/video/r1.rm"
    coords="30,80,100,100"/>
</video>
```

Time limited hot spot

```
<video src="video.rm" region="videoregion">
    <anchor href="/video2.rm" begin="0s" end="5s"/>
    <anchor href="/video3.rm" begin="5s" end="8s"/>
</video>
```

Linkage

```
<par id="text_and_video">
    <video src="video2.rm" region="newsregion"/>
    <textstream src="text.rt" region="textregion"/>
</par>
```

```
<a href="/newmedia.smil#text_and_video">
    <video src="video.rm" region="videoregion"/>
</a>
```

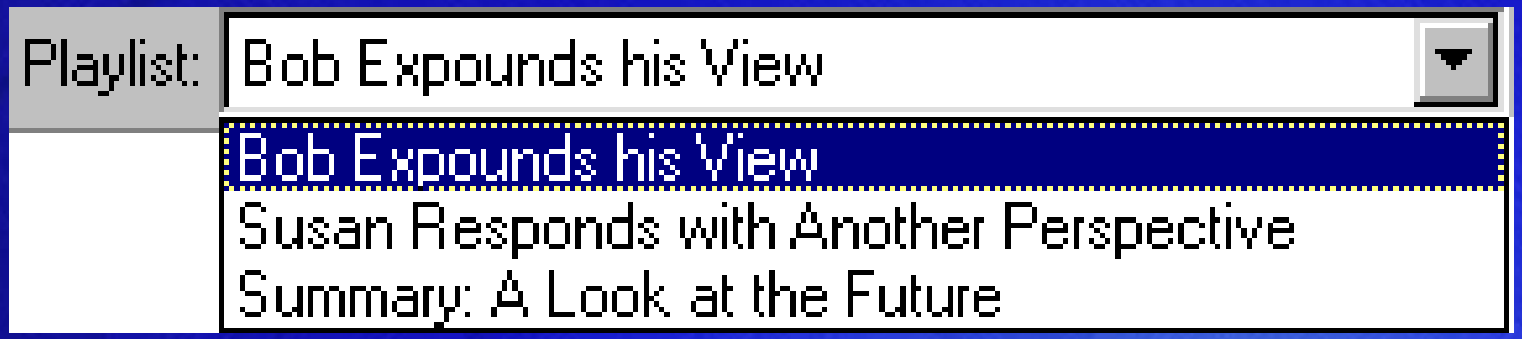
Information

```
<head>
    <meta name="title" content="Bob and Susan
        Discuss Streaming Media"/>
    <meta name="author" content="RealNetworks
        Media Productions"/>
    <meta name="copyright" content="©1998
        RealNetworks"/>
    <meta name="abstract" content="Bob and Susan,
        two Internet technology experts, discuss the
        future of streaming media."/>
</head>
```

Playlist

```
<seq>
    <video src="clip1.rm" title="Bob Expounds his
      View"/>
    <video src="clip2.rm" title="Susan Responds
      with Another Perspective"/>
    <video src="clip3.rm" title="Summary: A Look
      at the Future"/>
</seq>
```

PlayList


Playlist:
Bob Expounds his View
Bob Expounds his View
Susan Responds with Another Perspective
Summary: A Look at the Future